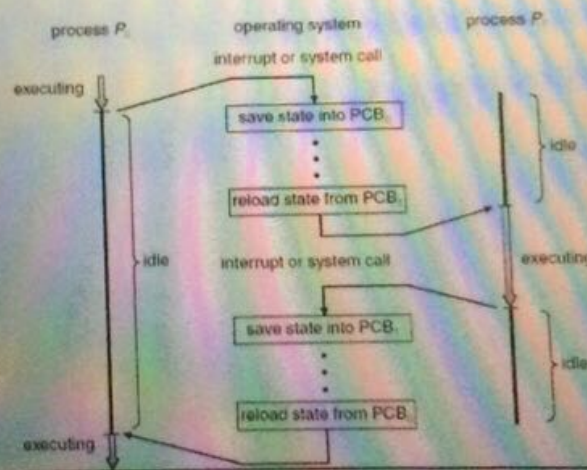


PART 1

A. Multiple Choice Questions

(1 * 5 = 5 Marks)

- The OS is a resource allocator because:
 - Execute parallel tasks efficiently.
 - Controls execution of programs.
 - ☒ Manages all system resources.
 - All of the above.
- Bootstrap program is loaded during system start-up to:
 - Initialize all aspects of system.
 - ☒ Load operating system kernel.
 - Start task execution.
 - All of the above.
- Job scheduler selects which process should be
 - brought into the waiting state
 - brought into the terminated state
 - ☒ brought into the ready state queue
 - None of the above.
- The following are information associated with each process, EXCEPT:
 - Program counter.
 - CPU scheduling information.
 - Process state.
 - ☒ Synchronization information.



- The above diagram illustrate
 - CPU resource allocation.
 - CPU scheduling.
 - ☒ CPU Switch.
 - None of the above.



Question 3: Discuss two reasons why use APIs rather than system calls. (4 Marks)

4

1) It's stable--system call differ from platform by platform but by using API easier to ~~main~~ migration.

System call provide version number with enhanced feature, API use app added to provide this support, if you call it you will get it but system call won't.

← 2) easy to upgrade, so if there is new feature ^{for} the system call ~~can't~~ can't protect it, while if there is upgrade for API can do it easily.

3) provide more ^{useful} functions than system call .. as if you make ~~changes~~ ^{changes} it's easier ~~to~~ the replacing the pre-call is ready to implement

Question 4: Explain four of the operating-system services which provide helpful functions to the user. (8 Marks)

8

① communication → process ~~exchange~~ info on the same computer or other by network via memory or message passing.

② error detection → aware of errors program. each type of error OS should take appropriate action to ensure correcting, also debugging to find & fix errors & bugs to enhance user & programmer efficiently ~~using~~ using system

③ User interface → most of OS have .. varies between GUI & CLI

④ program execution → system be able to load program into memory to run the program & execute perfectly. either normally or abnormally indicating errors.

PART 2

ESSAY ANSWER SHEET

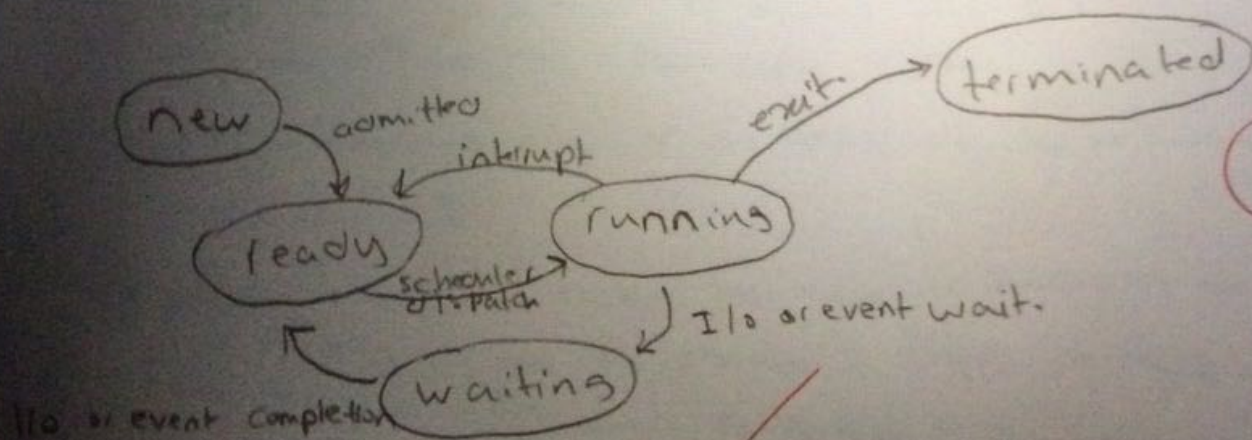
Question 1: List and discuss the computer system four components.

(4 Marks)

4

- 1- Hardware → "Memory, CPU, I/O devices"
provide basic resources.
- 2- Operating system → act like intermediaries between Hardware & user. use hardware resources to control & coordinate use of app. programs.
- 3- application program → use the resources to make decisions, prevent error. like video game, DB system, compiler, browser.
- 4- Users → interact with the system & provide output & finish the goals.. like other computer, people, machines..

Question 2: Draw a diagram showing the five process states with its relations. (5 Marks)



5



Question 5: Define the cooperating process and list three advantages. (4 Marks)

- It affects or be affected by other processes, systems & provide data sharing
- Advantages:
 - 1) share information.
 - 2) modularity.
 - 3) convenient & communication.
 - 4) economy of scale.

4

Question 6: Explain when parent process may terminate execution of children processes.

(3 Marks)

- parent provide the child then it makes tree diagram.
- both share resources & execute ~~after~~ parents after child finish execution. because from the lower to higher level.

If the child made wrong or less efficiency, the parent may finish on it & ~~complete~~ complete it.

- parent & child execute both can currently ~~to~~, child share subset resource of parent, child ~~duplicate~~ ^{from parent} & has a program to load to.